Abstract

Optical characteristic measuring systems and methods such as for determining the color or other optical characteristics of teeth are disclosed. Perimeter receiver fiber optics preferably are spaced apart from a source fiber optic and receive light from the surface of the object/tooth being measured. Light from the perimeter fiber optics pass to a variety of filters. The system utilizes the perimeter receiver fiber optics to determine information regarding the height and angle of the probe with respect to the object/tooth being measured. Under processor control, the optical characteristics measurement may be made at a predetermined height and angle. Various color spectral photometer arrangements are disclosed. Translucency, fluorescence, gloss and/or surface texture data also may be obtained. Audio feedback may be provided to guide operator use of the system. The probe may have a removable or shielded tip for contamination prevention. A method of producing dental prostheses based on measured data also is disclosed. Measured data also may be stored and/or organized as part of a patient data base. Such methods and implements may be desirably utilized for purposes of detecting and preventing counterfeiting or the like. Low cost and small form factor spectrometers, and methods for manufacturing the same, also are disclosed. Spectrometers and spectrophotometers embedded in printing and scanning and other type devices, as well as computer companion devices, scope-type devices and the like, also are disclosed. Data encoding based on such devices also may be implemented.